

#163316

William Maas, DDS, MPH¹, Barbara F. Gooch, DMD, MPH², Scott Presson, DDS MPH², Susan Griffin, PhD², and Shellie Kolavic-Gray, DMD, MPH (1) Division of Oral Health, Centers for Disease Control and Prevention, 4770 Buford Highway, Mailstop F10, Atlanta, GA 30341, 770-488-6054, wmaas@cdc.gov, (2) DOH, CDC, 4770 Buford Hwy, MS F10, Atlanta, GA 30341

Abstract

The placement of dental sealants in school-based settings has been questioned by some. Yet, state and local school-based programs provide an important service for at-risk children who may otherwise lack access to this valuable preventive service. The Centers for Disease Control and Prevention (CDC), working with a Sealant Expert Panel*, is developing new recommendations on school-based sealant programs. This presentation summarizes findings from evidence reviews conducted to inform the Panel's recommendations. The findings address recommendations related to sealant effectiveness on carious (decayed) surfaces, tooth assessment, surface preparation, outcomes associated with lost sealants, and four-handed technique. A key recommendation that varies from earlier recommendations is to seal both sound surfaces and those with non-cavitated lesions. Recommendations to support several aspects of school-based programs are supported by the findings. State and local oral health programs may utilize these recommendations to promote school-based sealant programs and modify policies and practices integral to them.

Introduction

Reasons for CDC Update

- Current guidelines last revised in 1994
- New information available on:
- Effectiveness of sealants (Systematic reviews)
- Caries (tooth decay) assessment techniques
- Prevalence of caries and sealants in the U.S.
- Request from Association of State and Territorial Dental Directors (ASTDD)
- To assure that current guidelines reflect the state of the science
- To address concerns about
- Sealing "incipient" carious lesions
- Lack of availability of radiographs or new diagnostic technologies

Objective

- To conduct focused review of:
- Effectiveness of sealants
- Indications for sealant placement
- Caries assessment and sealant placement techniques
- Sealant evaluation
- To update 1994 recommendations where necessary

Methods

- Expert Panel convened twice
- Identified key questions
- Reviewed science and practice
- Drafted recommendations based on science and expert opinion
- Document strength of evidence for each draft recommendation
- Rely on published systematic reviews
- "Mine" additional information from studies included in major systematic reviews
- Complete CDC systematic review of sealant effectiveness in managing caries

Implications of Recommendations for School-Based Sealant Programs

Evidence-based Review: Key Questions and Findings

Q1: What is the **effectiveness of sealants** in preventing caries initiation?

• Strong evidence for sealant effectiveness for prevention of caries initiation.

Q2: What is the **effectiveness of sealants** in managing caries progression?

• Sealants are effective in reducing caries progression in non-cavitated surfaces.

Q3: What is the effectiveness of sealants in reducing bacteria levels in carious lesions?

• Sealants reduce bacteria levels and the effect increases over time.

Q4: What **caries assessment methods** are necessary to differentiate between cavitated and non-cavitated surfaces?

• Visual assessment is appropriate and adequate to determine cavitation and other physical signs of dentinal involvement.

Q5: Is there an association between surface preparation methods and outcomes?

- Sealant outcomes do not differ between studies that used a hand piece or a toothbrush prophylaxis.
- Evidence is insufficient to determine the effectiveness of other methods, e.g., air abrasion or enameloplasty.

Q6: Does **four-handed technique** improve sealant outcomes?

• There is some evidence that four-handed technique may improve retention rates.

Q7: Are teeth that lose sealants at higher risk of caries than teeth that were never sealed?

• Caries risk for previously sealed teeth that lost a sealant is similar to caries risk for never-sealed teeth.

Recommendations

- Seal sound and non-cavitated pit-and-fissure surfaces
- Differentiate cavitated and non-cavitated lesions
- Visual assessment is appropriate
- Teeth can be dried with cotton rolls, gauze, or compressed air
- Explorer may be used to "confirm" cavitations; do not use under force
- Magnification (2x-4x) can be used, but is not required
- Radiographs are unnecessary solely for sealant placement
- Insufficient evidence to recommend other caries diagnostic technologies
- Place sealants
- Consult manufacturer's instruction
- Clean tooth surface; toothbrush prophylaxis can be used
- Insufficient evidence to recommend other surface preparation methods
- Use four-handed technique, when resources allow
- Seal teeth of children even if follow-up cannot be assured
- Evaluate sealant retention

Implications of Evidenced-based Recommendations

- Supports safety and effectiveness of sealants provided in school programs
- Promotes recommendations from Task Force on Community Preventive Services for school sealant programs

Next Steps

- Train examiners to reliably use standard visual criteria
- Propose feasible protocol to evaluate sealants after placement



Photo courtesy of Dr. Mark Siegal, Ohio Department of Health





• Requires effective dissemination to stakeholders (e.g., public health professionals, clinical dentistry, school nurses and administration)

• Develop guidance on interim management and referral strategies for children with treatment needs and limited access to care